Jingqi Huang

[Homepage] [LinkedIn]

+1-858-346-3462
jingqih46@gmail.com

EDUCATION

Purdue University — West Lafayette
M.S. and Graduate Research Assistant in Computer Science — May 2020 – May 2024 (Expected)

University of California, San Diego — La Jolla, California
M.S. in Electrical and Computer Engineering — March 2018 – March 2020

Beijing University of Posts and Telecommunications — Beijing, China
B.E. Internet of Things Engineering — August 2014 – June 2018

WORK EXPERIENCE

Intel Labs — Hillsboro, OR
Research Scientist Intern — May 2023 – Present

- Profiled a distributed microservice-based cloud-native application, Intel Aether SD-Core, using **Go pprof**, and pinpoint the user observed end-to-end latency bottleneck at high execution time of serialization/deserialization and high networkIO to/from database.
- Designing hardware/software co-design scheme for accelerating database access, and serialization/deserialization.

Intel Labs — Hillsboro, OR
Research Scientist Intern — May 2022 – August 2022

- Developed stateless microservices and dependent features in Intel Aether SD-Core project using **Go** to provide high availability and scalability while ensuring resource usage efficiency and low user observed end-to-end latency. [**Repo1**]
- Designed and implemented a microservice using **Go** to connect to multiple control plane microservices with HTTP interfaces, and the data plane with a PFCP interface. [**Repo1**]
- Developed high availability features for the stateless microservices using **Go** and **MongoDB**, including load balancer, keep-alive to ensure user requests can be handled under microservices failure. [**Repo1**]
- Designed a auto-horizontal **Kubernetes** pod scaling mechanism to reduce user observed end-to-end latency by $\sim 50\%$.
- This work has been open-sourced and launched in production by Intel, and field-tested by Deutsche Telekom and other major operators and enterprise customers. [**News1**, **News2**, **News3**]

Purdue University — West Lafayette, IN
Research Assistant — January 2021 – Present

- Profiled and analyzed the system workload of Intel Aether SD-Core, which is a microservice-based cloud-native 5G mobile core powered by **Go**, **MongoDB** and **Kubernetes**. Deployment and profile tools include **Python**, **Ansible**, **Kubespray**, **RKE2**, **Helm**, **Prometheus**, **Grafana**, **Go pprof**, **Linux file system stats**, **Open telemetry** and etc.
- Pinpointed latency bottleneck of the Intel Aether SD-Core in high execution time of message serialization/deserialization (up to $\sim 60\%$) and high contention time for resources, such as locks for HTTP connection pool and logging, of 5G mobile core microservices (up to $\sim 70\%$).
- Intel Aether SD-core project has adopted and open-sourced our development and debug effort.
- One first-author paper in submission.

Intel Labs — Hillsboro, OR
Research Scientist Intern — May 2021 – August 2021

- Implemented in-network ML aggregation and Map/Reduce operations on programmable data planes to reduce training and inference latency in distributed machine learning using **P4**, **Python**, **Bash** and **BMV2**.
- This work reduced the network latency by $\sim 4\times$, and saved the network bandwidth by $\sim 3\times$.
- This work had been merged in Intel Labs repo for further technology transfer.

SELECTED AWARDS AND RECOGNITIONS

- **2022 Meta PhD Research Fellowship Finalist**
- 2022 Intel Intern Recognition
- Published 7 papers including top conferences and journals [Google Scholar Link]

SYSTEMS & PROGRAMMING SKILLS

- Languages: Go, Python, Java, Bash, C/C++, P4, Matlab, HTTP/CSS and SQL/NoSQL
- Technologies: Kubernetes, Docker, Ansible, Helm, MongoDB, Git, gRPC, CI/CD, distributed system, CMake, SDN/OpenFlow, ONF Aether, Mininet, Wireshark

PUBLICATIONS

Journal Articles

1. Anfu Zhou, Shaoqing Xu, Song Wang, *Jingqi Huang*, Shaoyuan Yang, Teng Wei, Xinyu Zhang, and Huadong Ma. Robotic Millimeter-Wave Wireless Networks. **IEEE/ACM Transactions on Networking**, 28(4):1534–1549, 2020

Conference Papers

2. Jiayi Meng, *Jingqi Huang*, Y Charlie Hu, Yaron Koral, Xiaojun Lin, Muhammad Shahbaz, and Abhigyan Sharma. Characterizing and modeling control-plane traffic for mobile core network. *arXiv preprint arXiv:2212.13248*, 2022

3. Haotian Deng, Qianru Li, *Jingqi Huang*, and Chunyi Peng. iCellSpeed: Increasing Cellular Data Speed with Device-Assisted Cell Selection. In **ACM MobiCom**, 2020

4. Song Wang*, *Jingqi Huang**, and Xinyu Zhang. Demystifying Millimeter-Wave V2X: Towards Robust and Efficient Directional Connectivity Under High Mobility. In **ACM MobiCom**, 2020. (*Equal contribution)

5. Song Wang*, *Jingqi Huang**, Xinyu Zhang, Hyoil Kim, and Sujit Dey. X-array: Approximating Omnidirectional Millimeter-Wave Coverage Using an Array of Phased Arrays. In **ACM MobiCom**, 2020. (*Equal contribution)

6. Anfu Zhou, Shaoqing Xu, Song Wang, Jingqi Huang, Shaoyuan Yang, Teng Wei, Xinyu Zhang, and Huadong Ma. Robot Navigation in Radio Beam Space: Leveraging Robotic Intelligence for Seamless mmWave Network Coverage. In **ACM MobiHoc**, 2019

7. Song Wang*, *Jingqi Huang**, and Anfu Zhou. KPad: Maximizing Channel Utilization for MU-MIMO Systems Using Knapsack Padding. In **IEEE ICC**, 2018. (*Equal contribution)